NOTES.

One of the most illustrious men of science of the present century, Prof. Gustav Kirchhoff, died at Berlin on Monday. He was sixty-three years of age. Next week we shall have something to say about his services to science.

The *Gartenflora* for October announces the death of Dr. Robert Caspary, for many years Professor of Botany in the University of Königsberg. He was a native of Königsberg, where he was born in 1818, and the immediate cause of his death was a fall down stairs. The deceased was not a prolific writer, yet he was well known to botanists as a critical authority on the Nymphæaceæ. Local botany and the investigation of abnormal growths occupied much of his leisure time.

Mr. Robert Hunt, F.R.S., died on Monday, at his residence in London. Mr. Hunt was born in 1807 at Devonport, was the Keeper of Mining Records at the Museum of Practical Geology, and was the first-appointed Professor of Mechanical Science to the Government School of Mines.

Prof. Johann Konrad Ullherr, a well-known mathematician, died at Kaufbeuren on September 28, aged sixty-seven.

The last number of the Journal of the China Branch of the Royal Asiatic Society (vol. xxi. new series, Nos. 5 and 6) contains an obituary notice of the eminent Chinese scholar, Alexander Wylie, who died early in the present year. He was the author or translator of a considerable number of works of elementary science into Chinese. Amongst them were treatises on mechanics and arithmetic, translations of De Morgan's "Algebra," Loomis's "Geometry," Herschel's "Astronomy," "Euclid," and Main on the steam-engine. He also compiled a list of stars and astronomical terms in Chinese and English, and a paper on the Mongolian astronomical instruments in Pekin. It may be interesting also to notice that the same number of the Journal contains a sketch of the late Dr. Hance, of Canton and Whampoa, who was well known in Europe by his botanical writings, and whose death was noticed not long since in Nature. The writer appends a complete list of Dr. Hance's papers on botanical subjects, beginning with the year 1848. There are in all 119 of these relating to Chinese botany.

On the 9th inst. an interesting ceremony took place in the town of Le Mans (Sarthe). It was the unveiling of a statue erected to the memory of Pierre Belon, the celebrated zoologist and traveller of the sixteenth century. Pierre Belon was born in 1518. He was one of the first who established the homologies between the skeletons of different vertebrates. Over a century before the creation of the Jardin des Plantes in Paris, he had formed two botanical gardens. It was he who brought to France the first cedar planted there. It is a common tradition that the first specimen of this tree was brought by de Jussieu, but Belon had anticipated him by a century. The monument is very handsome. Belon is represented seated and holding a book. The expenses were covered by a public subscription.

The Council of the Senate of the University of Cambridge report, respecting the site for the Geological Museum, that, as the price required by Downing College is £5390, the University do not proceed further with the proposal. They recommend that a syndicate be appointed to consider the plans, and, if necessary, to procure fresh plans for the erection of the Sedgwick Memorial Museum on the site to the east of the new chemical laboratory, and to present plans to the Senate for their approval before the division of the Lent Term, 1888. The plans are to be so arranged that a part of the building sufficient for the purposes of teaching and study might, with the consent of the Sedgwick Memorial Committee, be erected with the money now in their hands.

The thirty-fourth annual meeting of the German Geological Society was held at Bonn on September 26, under the Presidency of Prof. Römer (Breslau). The following were among the papers read: on the dolerites of Londorf, near Giessen, by Prof. Streng (Giessen); on the basaltic rocks of the Vogelsberg, by the same; on the chalk of Umtamfuna, in Natal, the Upper Silurian Eurypterus dolomite of Gaaden, near Kiel, and on the mollusk fauna (fifty-four species) in the Central Oligocene of Itzehoe, by Dr. Gottsche (Hamburg); and on fossil footprints in the New Red Sandstone in Thuringia, by Dr. J. G. Bornemann (Eisenach).

A correspondent in Trinidad writes:—"We have a Committee appointed here for the purpose of endeavouring to determine the influence the moon has upon vegetation. It arose in this way: I found that in cutting timber, bamboo, pruning cacao, sowing seeds, planting provisions, the phase of the moon was always considered, and in consequence much time was lost. In England, years ago, I heard the same idea and disproved it by experiment. Here it has such a hold upon the Spanish section of the community that it is no use endeavouring to combat it by speaking or writing, and therefore experiment has been authorized. The superstition is so infectious that the Hon. Director of Public Works, after many years' experience, was inclined to believe in it. But after perusing the works of Arago which I lent him, and Lardner's 'Astronomy,' he has refrained from asserting anything, but has devoted himself to the experiments to prove the truth or falsity of the theory. When you aver that no notice is taken of the moon in agricultural operations in England, you are met by the reply, 'Oh, the moon has more influence in the equatorial districts,' &c., &c."

An Imperial Decree has been issued by the Mikado of Japan sanctioning regulations for the establishment of meteorological observatories, at the public expense, in the country. The regulations provide that the Central Observatory shall be situated in Tokio, and local observatories at such convenient places as may be designated by the Home Minister, without whose consent the local authorities may not establish observatories. The Central Observatory is to be under the Home Minister, while the local observatories are to be under the respective local Governments. The cost of maintaining local observatories is to be defrayed out of local taxation; they are to communicate and correspond with the Central Observatory according to departmental regulations which shall be made by the Home Minister.

The Aristotelian Society has decided to print, at the close of each session, an abstract of its proceedings. The first number, edited by Prof. Dunstan, has just appeared. It represents the work done during the eighth session, which terminated last June, and contains lengthy abstracts of many papers of interest, among them being: the ultimate questions of philosophy, by Prof. Bain; the re-organisation of philosophy, by Mr. Shadworth Hodgson; Neo-Kantism in its relation to science, by Mr. Romanes and Mr. Bernard Bosanquet; recent psycho-physical researches, by Dr. Cattell. The ninth session will open on November 7 with an address by the President. Among the papers to be read is one by Mr. Romanes, on Darwinism in relation to design; and one by Prof. Bain, on the demarcations and definitions of the subject sciences.

A book on tattooing, by Wilhelm Joest, will shortly be published by Messrs. A. Asher and Co., at Berlin. In this elaborate work, which will be fully illustrated, the author will present much information which he has collected during his extensive travels. He will also thoroughly discuss the question as to the motives which have led to the practice of tattooing.

A new periodical is being issued by Julius Springer, of Berlin, who has sent us a copy of the first number. The periodical is called *Zeitschrift für den Physikalischen und Chemischen Unterricht*, and is edited by Dr. Fritz Poske, with the aid of Dr. E. Mach and Dr. B. Schwalbe. The editor's principal object will be to provide an adequate exposition of the best ideas of the age as to the methods of instruction in chemistry and physics.

WE have received the first number of the *Journal of Morphology*, edited by Mr. C. O. Whitman, with the co-operation of Mr. E. P. Allis, Junr. and published by Messrs. Ginn and Co., Boston, U.S.A. The journal is to be devoted principally to embryological, anatomical, and histological subjects. It will be published at irregular intervals, new numbers appearing "as often as the requisite material is furnished." The second number will be issued in November, and will complete the first volume.

MESSRS. MACMILLAN have just issued a second edition of "The Growth of the Recruit and Young Soldier," by Sir W. Aitken. The work was originally published twenty-five years ago, and the writer's main object was to suggest a judicious selection of "growing lads" for the army and a regulated system of training recruits. In the present edition the subject-matter has been recast to meet the requirements of the time. Sir W. Aitken holds that the circumstances which justified the first publication are far more pronounced now than they were twenty-five years ago.

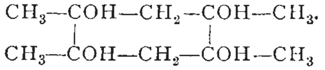
A SEVENTH edition of Prof. H. Alleyne Nicholson's well-known "Manual of Zoology" (Blackwood), has just been issued. While the general plan of the original book has been retained, the work has been recast. A considerable number of fresh illustrations have also been added.

THE Madras Literary Society has issued its Journal of Literature and Science for the session 1886-87. It contains, besides other good papers, notes on the cyclone of November 9, 1886, by C. Michie Smith; on a new method of finding the factors of any given number: a contribution to the theory of numbers, by J. K. Winter; on the reputed suicide of scorpions, by A. G. Bourne; the cosmogony of the Vedas, by the Rev. Maurice Phillips; and the pearl oyster of the Gulf of Manaar, by H. S. Thomas.

THE second Annual Report of the City of London College Science Society has been sent to us. The Society has steadily grown during the past year; and it is claimed that in general interest and thoroughness of treatment the papers read at the evening meetings were fully up to the standard previously set.

THE General Electric Apparatus Company have issued a third edition of their Illustrated Catalogue of Electric Lighting Plant and Material, and a sixth edition of their Illustrated Catalogue of Electric Bells. These catalogues present much interesting evidence as to the growth of a new and important industry.

A NEW tetrahydric alcohol, $C_{10}H_{20}O_4$, belonging to the series CnH_2nO_4, of which it is as yet the only known member, has been synthetically prepared in the laboratory of M. Friedel, by M. Combes (*Ann. de Chim. et Phys.*, October 1887). It is of special interest to organic chemists, as being the first tetrahydric alcohol which has been prepared by direct synthesis, and the discovery is but one of many exceptionally rich ones which have followed the application, by M. Combes, of the well-known aluminium-chloride reaction of MM. Friedel and Crafts, to the fatty series. While studying the action of chloride of aluminium upon acetyl chloride, it was found that a remarkable organo-metallic compound, $C_{12}H_{14}O_6Al_2Cl_8$, was formed, consisting of crystalline lamellæ showing strong colours in polarized light. These lamellæ dissolved in water with great violence, evolving carbonic and hydrochloric acid gases, and extraction with chloroform and subsequent distillation showed that the decomposition by water had resulted in the formation of a new ketone of the composition $C_5H_8O_2$ and constitution $CH_3—CO—CH_2—CO—CH_3$. To this ketone M. Combes gave the name acetyl-acetone, and it was by the hydrogenation of this substance that the new tetrahydric alcohol was obtained. The reduction was effected by means of hydrochloric acid and sodium amalgam, and, when the reaction was completed, a second extraction with chloroform and subsequent evaporation yielded a syrup consisting of a mixture of two compounds: one, boiling at 177°, being another new glycol of the composition $CH_3—CHOH—CH_2—CHOH—CH_3$; and the other, passing over at 270°, consisting of the anhydride of the tetrahydric alcohol, which appears to lose the elements of water very readily. The constitution of this alcohol is pretty conclusively shown to be



$$\begin{array}{l} CH_3—COH—CH_2—COH—CH_3. \\ \qquad\;\;\, | \qquad\qquad\qquad\;\; | \\ CH_3—COH—CH_2—COH—CH_3 \end{array}$$

It should be stated that the above are all general reactions, and open a wide field for further research; indeed, there can be little doubt that the richness of the results obtained through their first application by M. Combes will only prove an earnest of greater success in the future.

A CORRESPONDENT of the *Nation* for October 6, "R. T. H.," writing from Arkadelphia, Ark., directs attention to what he calls a "scientific revival" in the Southern States of America. "In several of the States," he says, "the question of elementary physiology and hygiene in the public schools has come before the Legislature this year, and, though generally decided adversely, opinion in its favour is growing, and it is a most active leaven. In the Colleges there is a great advancement, and technical studies and natural history may be said to be enjoying a 'boom.' The University of North Carolina has a small but modern Natural History Department. The University of Tennessee is also waking up in this respect. The Mississippi State Agricultural College is exceptionally modern, and the Arkansas State Industrial University has recently added a competent naturalist to its faculty. Tulane University of New Orleans is also paying attention to biologic studies. The most interesting struggle, however, is in Texas, where, owing to an inexplicable tangle, we have the spectacle of the most progressive University in the South handicapped by the most unreasonable embarrassments—the rivalry of another State institution and many sectarian Colleges. But there is no room to doubt that in a few years the struggle will end in the University being unfettered, and becoming a centre from which will radiate much intelligent thought." The writer says that one great obstacle to biologic teaching in the South—opposition to the importation of teachers from the North—is being in part obviated by the fact that young Southerners are beginning to be found who have been abroad or North. For all those who are fitted, good places are made.

AN earthquake is reported from Constantinople. It occurred at 10 a.m. on September 30, and lasted for seventeen seconds. Violent shocks were noticed on October 4 and 5 on the Greek mainland, the Ionian Islands, the Cyclades, and the Peloponnese.

SEVERAL earthquakes are reported from the south-east of Hungary, many having occurred during the last weeks of September. The most severe one was noticed at St. Peter's (Temesvar), one shock lasting for three seconds, and many houses being greatly damaged. The direction of the shock was from south-west to north-east.

A STEAMER which arrived lately at New York brought information from Navassa, an island lying between Hayti and Jamaica, that on September 23 an earthquake occurred there, which seemed to send a tremor through the whole island. No damage was done.

PROF. HUDSON is giving a course of lectures in the Michaelmas Term of 1887 at King's College once a week, on Wednesdays, at 7 p.m., on "Elementary Applications of the Differential and Integral Calculus," beginning with applications to dynamics.

THE additions to the Zoological Society's Gardens during the past week include a Crested Lark (*Alauda cristata* ♂) from India, presented by Colonel Verner; two Proteus (*Proteus* *anguinus*) from the Caves of Adelsburg, presented respectively by Prof. W. H. Corfield, F.Z.S. and Dr. E. Rickards; a Spotted Salamander (*Salamandra maculosa*), European, presented by Mr. Alban Doran; a Gorilla (*Anthropopithecus gorilla* ♂), three Pluto Monkeys (*Cercopithecus pluto*), an Erxleben's Monkey (*Cercopithecus erxlebeni* ♀) from West Africa, deposited; two Coypus (*Myopotamus coypus*), born in the Gardens.

OUR ASTRONOMICAL COLUMN.

NEW MINOR PLANET.—A new minor planet, No. 270, was discovered by Dr. Peters on October 13.

OLBERS'S COMET.—The following corrected elements and ephemeris for this object are by Herr O. Tetens (*Astr. Nachr.* No. 2806):—

$$T = 1887 \text{ October } 8{\cdot}4938 \text{ Berlin M.T.}$$

$$\left.\begin{array}{rcl} \pi &=& 149^\circ\ 48'\ 7'' \\ \text{☊} &=& 84\ \ 27\ \ 40 \\ i &=& 44\ \ 32\ \ 53 \end{array}\right\}\text{Mean Eq. } 1887{\cdot}0$$

$$\begin{array}{rcl} \phi &=& 68\ \ 35\ \ 36 \\ \log q &=& 0\ 078899 \end{array}$$

$$\begin{array}{rcl} x &=& [9{\cdot}854835]\, r \sin (v + 237^\circ\ 35'\ 31'') \\ y &=& [9{\cdot}972351]\, r \sin (v + 168\ \ 39\ \ 22) \\ z &=& [9{\cdot}891623]\, r \sin (v + 95\ \ 54\ \ 3) \end{array}$$

Ephemeris for Berlin Midnight.

1887	R.A. h. m. s.	Decl. ° ′	log *r*.	log Δ.
Oct. 22	13 6 38	21 47·3 N.	0·0856	0·2795
24	13 15 8	20 43·7		
26	13 23 28	19 59·3	0·0898	0·2831
28	13 31 39	19 14·5		
30	13 39 39	18 29·4	0·0950	0·2875
Nov. 1	13 47 30	17 44·1		
3	13 55 10	16 58·8	0·1010	0·2924
5	14 2 41	16 13·5		
7	14 10 2	15 28·3	0·1077	0·2979
9	14 17 13	14 43·5		
11	14 24 15	13 59·0 N.	0·1152	0·3037

The brightness on October 26 will be 1·48, and on November 11, 1·20; that on August 27 being taken as unity.

SOUTHERN DOUBLE STARS.—A welcome addition to the still somewhat scanty supply of observations of southern double stars is contained in the *Monthly Notices* for June 1887, which furnishes a series of measures of stars in relative motion recently made at the Sydney Observatory, special attention having been paid to the binaries α Centauri and γ Coronæ Australis. The mean of eighteen measures of position-angle and distance of the components of α Centauri gives for the epoch 1886·47: angle = 202°·3, distance = 15″·10; whilst the mean of four measures of difference of R.A. and of declination of the components gives for 1886·55: angle = 201°·0, distance = 14″·87. Referring to *Monthly Notices*, vol. xlvi. p. 340, we find that for the former epoch the computed places are as follows:—

Downing-Elkin orbit-angle = 202°·6, distance = 15″·11.
Powell orbit-angle = 201·8, distance = 15·26.

These orbits give for the periodic time of α Centauri the values 76 years and 87 years respectively; it appears, however, that several more years' observation will be necessary to decide which of these is the more accurate. Of γ Coronæ Australis eight measures were made at Sydney in 1886. The most satisfactory orbit of this binary hitherto published is that computed by Mr. Gore (*Monthly Notices*, vol. xlvi. p. 104), and the errors of the computed quantities as compared with the observations which have been published since the computations were made are:—

Epoch.	Observed angle. °	Error. °	Observed distance. ″	Error. ″
1881·72	225·5	+ 1·8	1·38	− 0·02
1883·62	217·8	− 1·3	1·62	− 0·33
1886·615	200·6	− 4·6	1·45	− 0·33

The first two of these observations were made at Cincinnati, and published in the *Observatory*, vol. ix. p. 234, the last at Sydney. Mr. Gore's orbit gives 1886·53 as the time of periastron passage; it is very desirable, therefore, that this pair should be repeatedly measured during the next few years in order that the small corrections to the elements which appear to be required may be accurately determined.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1887 OCTOBER 23–29.

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on October 23

Sun rises, 6h. 39m.; souths, 11h. 44m. 26·2s.; sets, 16h. 50m.; decl. on meridian, 11° 24′ S.: Sidereal Time at Sunset, 18h. 57m.

Moon (at First Quarter October 23, 18h.) rises, 13h. 37m.; souths, 18h. 1m.; sets, 22h. 28m.; decl. on meridian, 18° 47′ S.

Planet.	Rises. h. m.	Souths. h. m.	Sets. h. m.	Decl. on meridian. ° ′
Mercury	9 7	13 14	17 21	21 14 S.
Venus	3 15	9 21	15 27	0 30 N.
Mars	1 25	8 25	15 25	10 57 N.
Jupiter	7 50	12 36	17 22	14 49 S.
Saturn	22 40*	6 28	14 16	19 6 N.

* Indicates that the rising is that of the preceding evening.

Occultations of Stars by the Moon (visible at Greenwich).

Oct.	Star.	Mag.	Disap. h. m.	Reap. h. m.	Corresponding angles from vertex to right for inverted image. ° °
23	σ Capricorni	5½	20 18	21 29	113 327
24	θ Capricorni	4	16 32	17 52	78 277
26	70 Aquarii	6	19 50	21 7	88 323
28	B.A.C. 81	6½	23 32	0 21†	85 12
29	26 Ceti	6½	19 22	20 37	87 274
29	29 Ceti	6½	22 40	23 57	141 294

† Occurs on the following morning.

Oct.	h.	
27	3	Mercury at greatest elongation from the Sun, 24° east.
28	—	Venus at period of greatest morning brilliancy.

Variable Stars.

Star.	R.A. h. m.	Decl. ° ′		h. m.	
U Cephei	0 52·3	81 16 N.	Oct. 23,	3 51	*m*
			,, 28,	3 30	*m*
Algol	3 0·8	40 31 N.	,, 24,	2 32	*m*
			,, 26,	23 21	*m*
ζ Geminorum	6 57·4	20 44 N.	,, 25,	0 0	*M*
S Cancri	8 37·5	19 26 N.	,, 26,	2 10	*m*
S Ursæ Majoris	12 39·0	61 43 N.	,, 25,		*M*
U Coronæ	15 13·6	32 4 N.	,, 24,	1 58	*m*
T Ophiuchi	16 27·3	15 53 S.	,, 25,		*M*
U Ophiuchi	17 10·8	1 20 N.	,, 23,	0 51	*m*
			and at intervals of	20 8	
η Aquilæ	19 46·7	0 43 N.	Oct. 24,	20 0	*m*
S Aquilæ	20 6·4	15 17 N.	,, 23,		*m*
δ Cephei	22 25·0	57 50 N.	,, 25,	1 0	*M*
			,, 28,	19 0	*m*

M signifies maximum; *m* minimum.

Meteor-Showers.

	R.A. °	Decl. °	
Near β Tauri	78	30 N.	Swift.
From Canis Minor	105	12 N.	Swift; streaks.
,, Cancer	135	20 N.	Very swift.

GEOGRAPHICAL NOTES.

MM. BONVALOT, CAPUS, AND PEPIN, who have just returned to France from an extensive journey in Central Asia, are credited with having been the first to cross the Pamir. They may certainly have been the first to take the particular north to south route traversed by them, but the Pamir has been crossed